REMARKS

Claims 1-9 were previously pending in this application. Claims 1-9 are cancelled without prejudice or disclaimer and are rewritten as new claims 10-16, 20 and 22 to more clearly describe some aspects of the invention. Claim 8 has been amended to be in independent form as claim 20. Claim 9 has been amended to remove two steps in the recited method and recast as claim 22. New independent claim 27 and dependent claims 17-19, 21, 23-26, and 28-34 have been added. Support for new independent claim 27 and dependent claims 17-19, 21, 23-26 and 28-34 can be found in the specification, claims, and figures as originally filed. As a result, claims 10-34 are pending for examination with claims 10, 20, 22, and 27 being independent claims. No new matter has been added.

Objection to the Drawings

Applicant has included a replacement drawing sheet with a replacement FIG. 1 as an attachment to this paper. Accordingly, entry of this replacement FIG. 1 and reconsideration and withdrawal of this objection is respectfully requested.

Objection to the Claims

The correction required by the Examiner has been made in amended independent claim 20 (previously claim 8). Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

Rejections Under 35 U.S.C. §103

Independent claims 10 and 20 and dependent claims 11-16 (previously claims 1-8) were rejected under 35 U.S.C. §103(a) as being unpatentable over Purdy et al., PCT Publication Number WO 01/00307 A2 (hereinafter "Purdy").

Independent claim 22 (previously claim 9) was rejected under 35 U.S.C. §103(a) as being unpatentable over Purdy in further view of U.S. Patent No. 6,303,035 to Cote et al. (hereinafter "Cote").

No *prima facie* case of obviousness of independent claims 10 and 20 and dependent claims 11-16 over Purdy can be made. Independent claims 10 and 20 and dependent claims 11-

16 would not have been obvious over Purdy because a person of ordinary skill in the art would not have been motivated to modify or combine the embodiments disclosed in Purdy in the manner suggested to arrive at subject matter as presently claimed.

Independent claim 10 is directed to a filtration arrangement. The filtration arrangement comprises an aeration hood comprising an upper wall and at least one downwardly extending side wall. The at least one side wall at least partially shrouds at least one membrane module vertically positioned within a feed tank. The aeration hood comprises at least one open-ended tube, the at least one open-ended tube extending downwardly from the upper wall. Each of the at least one open-ended tubes have at least one of the at least one membrane modules mounted therein and have at least one aeration opening at a location spaced from an upper end of the at least one open-ended tube. The aeration hood extends to below the location of the at least one aeration opening in the at least one open-ended tube.

Purdy is directed to a membrane based filtration device. (Page 1, line 3.) Purdy discloses one embodiment of a filtration device in FIG. 1 and a second embodiment in FIG. 2 and FIG. 3. In the embodiment according to FIG. 1, filtration occurs from the exterior of the membrane module through the membrane, such that the flow of filtrate is from the outside of the module to an inner lumen channel. (Page 6, line 27-28; page 7, lines 17-18.) In the embodiment according to FIG. 3 (which is an alternate view of FIG. 2), filtration occurs from the interior of the membrane tubes through the membrane such that water permeates from the inside (the lumens) of the tubes through to the exterior of the membrane. (Page 7, lines 20-22; page 8, lines 15-17.) In FIG. 1, Purdy discloses an embodiment with a housing 2 and a manifold 11 connected to the interior of the membrane modules. In FIG. 3 Purdy appears to disclose an embodiment with an upper wall (the part with the openings 22) and a housing 21. Neither of these embodiments, or anything else disclosed by Purdy, discloses, teaches, or suggests a filtration arrangement comprising an aeration hood, which as described in Applicant's specification is capable of trapping gas and having liquid displaced therefrom by the introduction of gas. Nor does anything in Purdy disclose, teach, or suggest an aeration hood comprising one or more open-ended tubes comprising one or more aeration openings, which as described in Applicant's specification are adapted to permit the flow of gas into the one or more open-ended tubes.

No *prima facie* case of obviousness of independent claim 10 over Purdy can be made. Neither of the embodiments disclosed in Purdy, nor any alleged combination of these

embodiments, would have resulted in the filtration arrangement as claimed in independent claim 10 because it would not have included each and every recited claim limitation. Further, one of ordinary skill in the art would not have been motivated to combine these embodiments because these embodiments teach away from one another and these embodiments could not have been combined in a way that would have provided a reasonable expectation of success.

Neither of the embodiments according to FIG. 1 or FIG. 3 of Purdy, alone or in any alleged combination, or anything else in Purdy, discloses, teaches, or suggests a filtration arrangement comprising an aeration hood as recited in independent claim 10. The meaning of the phrase "aeration hood" of independent claim 10 should be construed in light of the description in the specification. (*See Phillips v. AWH*, 415 F.3d 1303, 1315 (Fed. Cir. 2005)). The present specification explains that an aeration hood 10 can be a structure having an upper wall 11 and one or more side walls 12, 13 and open at its base. In service, gas that bubbles up from the aeration lines 18 displaces feed liquid from within the aeration hood 10 with a resultant lowering of the liquid level within the hood. (Application page 4, line 23 - page 5 line 2; page 5, lines 22-25; page 6, lines 23-25). Nothing in Purdy discloses, teaches, or suggests a filtration arrangement comprising an aeration hood that can retain gas to displace feed liquid therefrom.

The Examiner asserts that in FIG. 1, Purdy discloses an aeration hood defined by housing 2 and manifold 11 and that in FIG. 3, Purdy discloses an aeration hood defined by an upper wall (the part with the openings 22) and housing 21. However, neither of these figures discloses an aeration hood as presently claimed because both FIG. 1 and FIG. 3 show embodiments where gas introduced from an aeration inlet (FIG. 1, element 8 and FIG. 3, element 24) may escape from an open upper end of the filtration arrangement. Neither of these embodiments, alone or in combination, discloses or could have been modified to form an aeration hood as recited in independent claim 10.

In addition, neither of the embodiments shown in FIG. 1 or FIG. 3, alone or in combination, discloses, teaches, or suggests a filtration arrangement comprising an aeration hood comprising one or more open-ended tubes, each extending downwardly from an upper wall as recited in independent claim 10. The Examiner cites the area that is between the side walls and the membranes in FIG. 1 of Purdy as disclosing this element. However, the area cited by the Examiner is open space, not a tube. Even if this open space could be considered a tube, it is not open-ended. Rather, it would be closed-ended on its bottom end by the air diffuser 4 of FIG. 1.

Thus, Purdy does not disclose, teach, or suggest a filtration arrangement comprising an aeration hood comprising one or more open-ended tubes, each extending downwardly from an upper wall as recited in independent claim 10.

Further, the embodiments shown in FIG. 1 or FIG. 3, alone or in combination, do not disclose, teach, or suggest a filtration arrangement comprising one or more aeration openings provided in one or more open-ended tubes as recited in independent claim 10. As discussed above, Purdy does not disclose, teach, or suggest any open-ended tubes at all, and thus can not disclose, teach, or suggest one or more aeration openings in one or more open-ended tubes. The Examiner incorrectly equates elements 9 and 10 of FIG. 1 with the one or more aeration openings as recited in independent claim 10. Applicant's specification explains that the aeration openings can be through holes or slots through which gas may pass into the one or more open-ended tubes and into the module membranes. (Application page 4, lines 5-6, 14-15; page 5, lines 3-4; page 7 lines 1-2). The elements cited by the Examiner cannot be aeration openings in any alleged open-ended tube because they are incapable of allowing gas to pass through. Thus, Purdy does not disclose, teach, or suggest a filtration arrangement comprising one or more aeration openings as recited in independent claim 10.

In the rejection of independent claim 10, the Examiner combines the embodiments disclosed in FIG. 1 and FIG. 3 of Purdy. However, one of ordinary skill in the art would not have been motivated to combine these embodiments because the two embodiments have different, mutually exclusive principles of operation. As stated above, in the embodiment according to FIG. 1, filtration occurs from the exterior of a membrane module through the membrane. In contrast, in the embodiment according to FIG. 3, filtration occurs from the interior of the membrane module through the membrane. There would have been no motivation for one of ordinary skill in the art to combine these embodiments because the two embodiments teach away from one another because the flow of the filtrates during filtration are in opposite directions in the two embodiments. These two embodiments could not have been combined with any reasonable expectation of success because the resulting combination would supply feed and withdraw filtrate from both sides of the membrane walls and could not function for its intended purpose.

In summary, an embodiment of a filtration module where filtration occurs from outside fiber membrane filters from a tank into the membrane lumens, such as in Purdy FIG. 1 could not

have been validly combined with a filtration module where filtration occurs from inside the membrane lumens outward such as in Purdy FIG. 3.

Thus, no *prima facie* case of obviousness of independent claim 10 can be made based on Purdy. One of ordinary skill in the art would not have been motivated to combine the embodiments in FIG. 1 and FIG. 3 of Purdy because these embodiments could not have been combined with any reasonable expectation of success. Further, any alleged combination of these embodiments would have lacked at least one explicitly recited claim element in independent claim 10.

Independent claim 20 and dependent claim 21, which depends from independent claim 20, are also patentable for at least the same reasons as independent claim 10.

Accordingly, reconsideration and withdrawal of the rejection of independent claims 10 and 20 under 35 U.S.C. §103(a) as being unpatentable over Purdy is respectfully requested.

Dependent claims 11-19 depend from independent claim 10 and are patentable for at least the same reasons as claim 10. Accordingly, reconsideration and withdrawal of the rejection of dependent claims 11-16 under 35 U.S.C. §103(a) as being unpatentable over Purdy is respectfully requested.

No *prima facie* case of obviousness of independent claim 22 over Purdy in view of Cote can be made because neither Purdy nor Cote, alone or in combination discloses, teaches, or suggests all of the claim limitations of independent claim 22.

Independent claim 22 recites a method of cleaning a membrane module disposed in a tank comprising immersing in feed liquid a filtration arrangement comprising an aeration hood at least partially shrouding the membrane module, the aeration hood comprising a tube extending downwardly from an upper wall of the aeration hood, the tube at least partially enclosing the membrane module and comprising an aeration opening at a location spaced from an upper end thereof, the aeration hood extending to below the location of the aeration opening, displacing the feed liquid within the aeration hood with a gas to a level below the location of the aeration opening, and passing the gas through the aeration opening into a volume enclosed by the tube.

Cote is directed to a method of filtering water using immersed ultrafiltration and microfiltration membranes. (Col. 1, lines 8 et seq.) The method includes a permeation step, an aeration step, and a draining step. (FIG. 1; Col 4, lines 10 et seq.) Cote nowhere discloses,

teaches, or suggests a filtration arrangement comprising an aeration hood, let alone an aeration hood comprising a tube comprising an aeration opening.

As discussed above, nothing in Purdy discloses, teaches, or suggests a filtration arrangement comprising an aeration hood that can retain a gas that displaces feed liquid therefrom, nor does Purdy disclose, teach or suggest aeration openings in any tubes through which gas may pass. Purdy thus cannot disclose, teach, or suggest a method comprising displacing feed liquid within an aeration hood with a gas and passing the gas through an aeration opening into a volume enclosed by a tube.

Thus, independent claim 22 would not have been obvious over Purdy in view of Cote because the alleged combination cannot teach each and every recited limitation thereof.

Accordingly, reconsideration and withdrawal of the rejection of independent claim 22 under 35 U.S.C. §103(a) as being unpatentable over Purdy in further view of Cote is respectfully requested.

Dependent claims 23-26 depend from independent claim 22 and are patentable for at least the same reasons as claim 22.

New Claims

New claims 17-19, 21 and 23-34, which include dependent claims 17-19, 21, and 23-26 which have been discussed previously above, are patentable for at least the same reasons as discussed above.

CONCLUSION

In view of the foregoing Amendments and Remarks, this application is in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes that the application is not in condition for allowance, the Examiner is requested to call Applicant's attorney at the telephone number listed below.

If this Response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this Response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762. (Ref. No. M2019-7023US)

Respectfully submitted,
Warren Thomas Johnson, Applicant

By: /Gregory K. Gerstenzang/
Gregory K. Gerstenzang, Reg. No. 59,513
Peter C. Lando, Reg. No. 34,654
Elias Domingo, Reg. No. 52,827
LOWRIE, LANDO & ANASTASI, LLP
One Main Street
Cambridge, Massachusetts 02142
United States of America
Telephone: 617-395-7000
Facsimile: 617-395-7070

Docket No.: M2019-7023US
Memcor Ref. No. IPD-C330-US
Date: December 31, 2007